

## Claims

- Sub 5
- AB 10
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1. Process for the production of an electrochromic coating on a substrate by cathode sputtering of a target in a coating atmosphere containing a noble gas, in particular argon, and hydrogen ions, characterized in that at least one gaseous hydrocarbon is added to the coating atmosphere.
  2. Process according to claim 1, characterized in that at least one gaseous saturated hydrocarbon is added to the coating atmosphere.
  3. Process according to claim 2, characterized in that methane is used as hydrocarbon.
  4. Process according to claim 2, characterized in that ethane, propane or butane is used as hydrocarbon.
  5. Process according to one of claims 1 to 4, characterized in that oxygen is additionally added to the coating atmosphere.

6. Process according to claim 5, characterized in that the volumetric ratio of added hydrocarbon to added oxygen is in the range 3:1 to 1:3, in particular approximately 1:1.
7. Process according to claim 5 or 6, characterized in that the volumetric ratio of noble gas, in particular argon, to oxygen is in the range of 3:1 to 1:3, in particular approximately 1:1.
8. Process according to one of claims 1 to 7, characterized in that operation takes place at a total pressure of the coating atmosphere of  $0.3 \cdot 10^{-2}$  mbar to  $10^{-1}$  mbar, in particular of  $1 \cdot 10^{-2}$  mbar to  $4 \cdot 10^{-2}$  mbar.
9. Process according to one of claims 1 to 8, characterized in that a target consisting of tungsten or of a tungsten alloy is used.
10. Process according to one of claims 1 to 9, characterized in that a target containing molybdenum, titanium, cerium, vanadium and/or zirconium is used.

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11. Process according to one of claims 1 to 10, characterized in that the electrochromic coating (16, 20) is applied with a thickness in the range of 50 nm to 500 nm.

12. Electrochromic element with at least one electrochromic coating (16, 20) which has been produced according to a process according to one of the foregoing claims.

13. Electrochromic element according to claim 12, characterized in that  $\text{Li}^+$  ions are used as charge carriers.

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